

The Babraham Institute undertakes innovative, world-leading life sciences research to generate new knowledge of biological mechanisms underpinning ageing, development and the maintenance of health.

Research focuses on signalling and genome regulation, particularly the interplay between the two; by determining how the body reacts to dietary and environmental stimuli and manages microbial and viral interactions, we aim to improve wellbeing and healthier ageing.

Researchers are studying intracellular signalling pathways to elucidate the mechanism of action of PI3-Kinases, MAP kinases, small GTPases and calcium-mediated signalling in the immune, cardiovascular and nervous systems or in processes like angiogenesis. The key proteins often represent targets for therapeutic intervention. Babraham is developing expertise in Mass Spec lipidomics analysis and Next Generation Sequencing, integrating basic and translational research.

Babraham Bioscience Technologies Ltd. (BBT) delivers the Institute's knowledge exchange remit and facilitates academic-commercial links.

Commercialisation is achieved mainly through licensing to companies. BBT also manages the campus Bioincubator, home to 28 early-stage bioventures, including a biopharmaceutical spin-out based on the Institute's antibody expertise. BBT's Technology Development Laboratory offers bench space, equipment and research services to support early-stage bioventures.

The Institute supports the Biotechnology and Biological Sciences Research Council's (BBSRC) mission to drive advances in fundamental bioscience to underpin health and wellbeing during ageing, which contributes to wealth creation for the United Kingdom.



Knowledge Exchange and Commercialisation in Epigenetics at Babraham

Collaboration with CellCentric Ltd

The Babraham Institute has an ongoing relationship with CellCentric Ltd, a Cambridge-based company which aims to discover therapeutics acting on second-generation epigenetic targets.

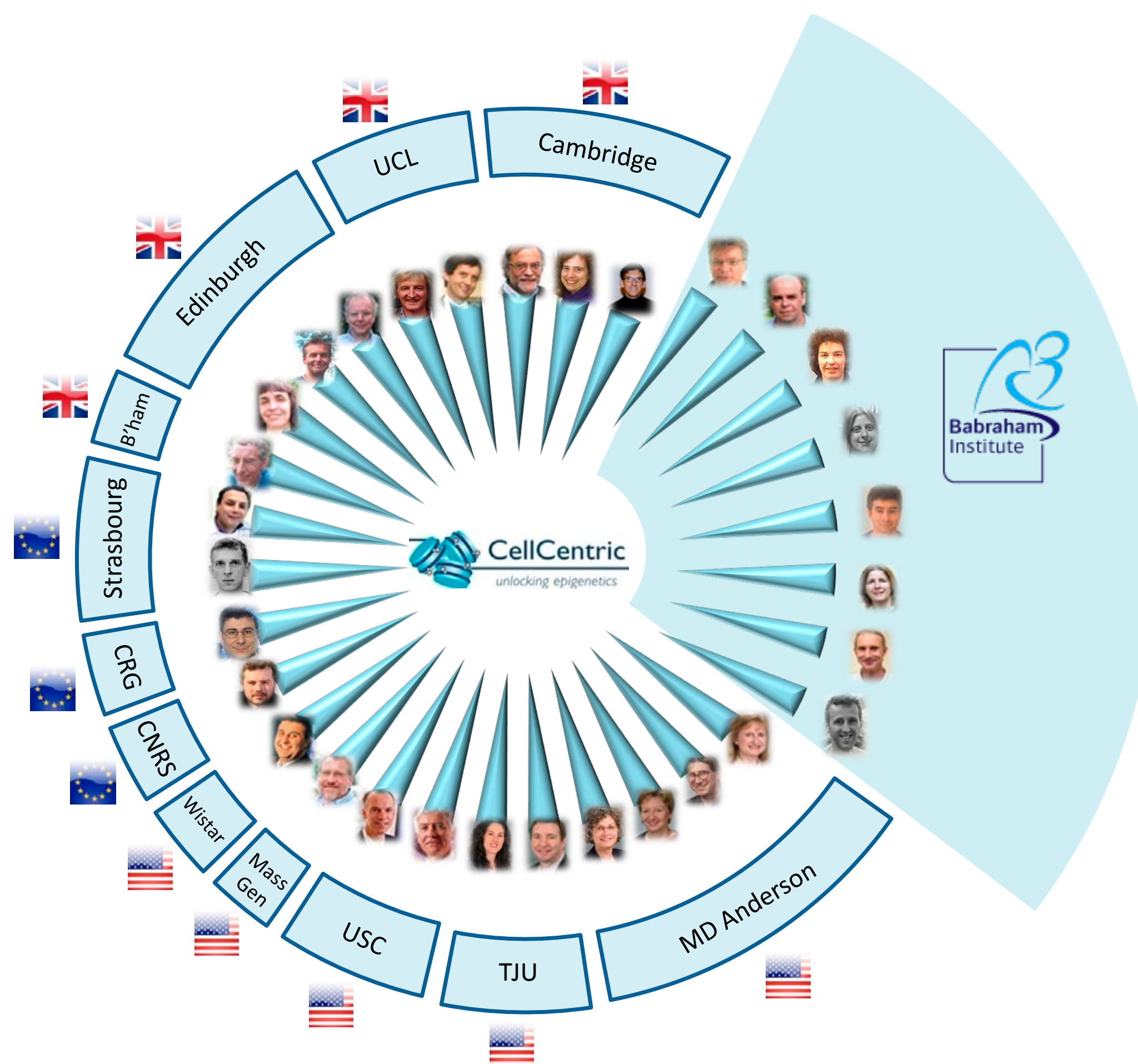
Knowledge exchange and commercialisation in a new scientific field such as epigenetics can be challenging, as emerging information is often fragmented and difficult to contextualise. In drug discovery specifically, where the associated biology is complex, it is thus hard to identify those opportunities of real potential clinical impact and thus commercial importance.

CellCentric's solution is an innovative approach to knowledge assimilation and drug discovery that addresses this. The company has a network of intellectual property agreements with multiple leading research Institutes and Principal Investigators.

The company works with Institutions to proactively identify epigenetic-related data and resources of commercial utility and applicability to both prioritise new drug targets ahead of the competition and to expedite drug discovery.

This ability to cross-fertilise information from different sources provides the company and its partners with differentiated competitive intelligence in this rapidly advancing sector.

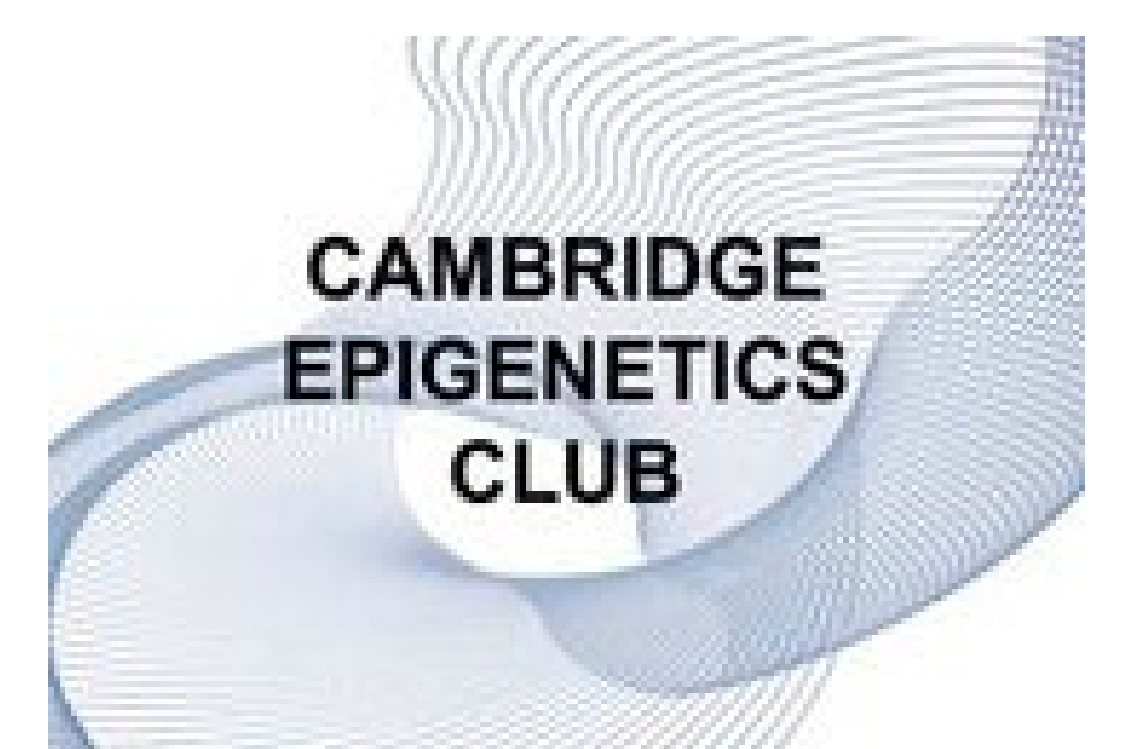
Eight Babraham group leaders have signed up to a confidential disclosure, evaluation and option agreement with CellCentric. To date this collaboration has resulted in two patent applications and a number of collaborative research projects.



Knowledge Exchange in Epigenetics

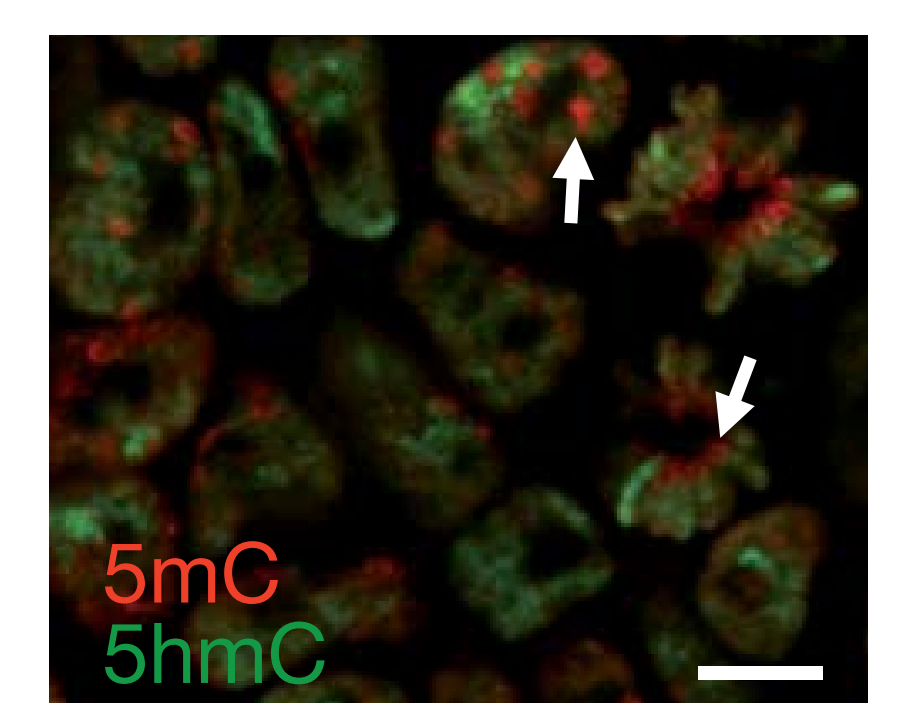
Significant interest is building in epigenetics both in the academic and commercial sectors, in particular in relation to cancer therapeutics and regenerative medicine, but increasingly also in other areas. In order to facilitate the dialogue between industry and academic partners and to foster collaborations, Babraham Institute scientists, together with the University of Cambridge, established the Cambridge Epigenetics Club in 2010.

The club brings together approximately 30 groups with epigenetics research interests and industrial partners; it is generously supported by CellCentric, Qiagen, Pfizer, Diagenode, Illumina, and Millipore, reflecting the current commercial interest in this area. The club meets monthly in term time, to listen to presentations from leaders in the field and for networking.



5-hydroxymethylcytosine Antibody

Research in the Reik lab has shown that a new type of epigenetic modification, 5-hydroxymethylcytosine (5-hmC), is enriched in euchromatic areas of the genome, and is associated with increased gene expression. It is believed



Immunofluorescence co-staining of cells with antibodies against 5-hmC (green) and 5-mC (red).

that the conversion of 5-methylcytosine (5-mC) to 5-hmC increases transcriptional levels.

During this study the lab generated a monoclonal antibody against 5-hmC which has now been licensed to Diagenode, Millipore and Abcam and is available through the Babraham Institute's Antibody Facility.

Ficz et al (2011) Nature:
Dynamic regulation of 5-hydroxymethylcytosine in mouse ES cells and during differentiation

